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ABSTRACT

A reliable system of social indicators reported as composite numerical indexes has utility for both research and policy purposes. Composite indicators can summarize the broad and abstract conditions of well-being which cannot be readily described with a single indicator or series of single indicators. They provide simple, readily interpretable pictures of variations in well-being across the nation. Based on selected 1970 Census and Vital Statistics data, four composite indexes to describe social well-being were developed; socioeconomic status, health status, family status, and social pathology formed the constructs underlying the indexes. Utility of the indicators was demonstrated with an analysis of metro-nonmetro and regional differences in social well-being in 3,097 counties across the nation. Large metro-nonmetro differences were shown for socioeconomic status and health status, but little difference in family status and social pathology was observed. Regionally, socioeconomic status, health status, and family status were highest in the North and West and lowest in the South. Social pathology was highest in the West and lowest in South and North Central counties. Methodology described includes data selection, principal components analysis, derivation of factor scores, and conversion of the index to a common scale. (DS)

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USE OF COMPOSITE INDEXES TO ASSESS SOCIAL WELL-BEING IN U.S. COUNTIES

Peggy J. Ross and Fred K. Hines *

1978

Purpose

The main purpose of this paper is to describe a system of social indicators for U.S. counties which was developed through research in the Department of Agriculture. 1/ Specifically, we focus on a methodology to construct four composite indexes of social well-being for 3,097 counties whereby principal components analysis was applied to selected 1970 Census and Vital Statistics data. The constructs underlying the indexes were defined as socioeconomic status, health status, family status and social pathology. We also demonstrate use of the indicators by analyzing metro/nonmetro and regional differences in well-being across the Nation.

A secondary concern of our paper is to consider the utility of social indicators in the form of multiple variables combined into composite indexes. Some researchers interested in social indicators have expressed skepticism about the utility of factor scores and composite indexes devised through other methods for policy purposes. We take the following position: that composite indexes are a methodologically superior approach to social indicators; that a carefully devised system of indicators measured through composite indexes can become a system of statistics used to report objectively the current state of

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1/ Results of the total study are reported in Ross, Bluestone and Hines (1978).

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social conditions in the Nation and to make predictions about future states of social well-being; that such indicators potentially may be of great value to aid policy and program decisions.

Background

Since the 1960's, social scientists have increasingly explored ways of using the massive array of available social data to create social indicators which measure conditions of social well-being. Efforts to define and to measure various aspects of social well-being have been marked by considerable controversy, and a useful system of social indicators as characterized by Andrews and Withey (1976:4) is yet to be realized.

> The quest for a limited yet comprehensive set of coherent and significant indicators, which can be monitored over time, and which can be dissaggregated to the level of the relevant social unit... The set of indicators should be "limited" so they can be understandable and not overly detailed, lengthy, or complex. The indicators should be "comprehensive" so that a substantial portion of the most salient or critical aspects of society is included. They should be "coherent" in that it would be helpful to our understanding if they hung together in some form that would eventually lead to a model or theory about how society operates.

Nonetheless, few will dispute that work to develop social indicators has progressed steadily, although efforts have differed in the social concerns addressed, the statistics used, and the social units treated. Strides have been made in distinguishing between different types of indicators such as those reflecting general objective states of well-being (which we are concerned with here) and subjective indicators which reveal how people feel about social conditions (Campbell, et.al., 1976).

There are many advocates for the use of single-item indicators. A wide array has been used to document national well-being. Over 300 different indicators covering eleven social concerns were reported in Social Indicators, 1976 (Department of Commerce, 1977).

Social indicators have also taken the form of several items combined into composite indexes through various statistical procedures. These have ranged from simple summated scores to weighted and scaled indexes. Liu (1974, 1976) used an additive method to build composite indicators for SMSA's and constructed nine state composite indicators from over 100 items. Colley (1975) developed a composite index of social change for 37 census tracts in Providence, Rhode Island expressed as the geometric mean of 6 indicators.

In several instances, factor analysis has been employed to build indexes. Ladewig and McCann (1978), in a study of 2,200 residents of the southeastern United States, used common factor analysis to develop composite subjective indicators for three areas of life satisfactions. Wilson (1969) and later Smith (1973) used the technique to construct indexes of quality of life for individual States. Smith worked with 47 measures to build composite indexes of quality of life following different techniques. 2/ Using factor analysis, he produced six indicators of well-being, but only reported two (State indicators of general socio-

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2/ An additive model (summated standard scores), a weighted additive model, and a principal components model were applied to the data set for U.S. states.

economic well-being and social pathology) because of ambiguities in interpretation of the remaining ones.

Barrows and Shaffer (1975) in one of the few studies which focused on counties as the units of analysis, constructed seven indexes of "development" for Wisconsin counties through a specialized application of principal components analysis. Measures of seven areas of development were arbitrarily selected and factor analyzed separately to verify the presence of a single underlying dimension. Our research builds upon and refines these earlier efforts to employ factor analysis as the primary statistical tool for indexing social well-being.

Construction of the Indexes

The principal components method of factor analysis was used to develop composite indexes of social well-being for U.S. counties from the large pool of social data routinely collected and processed by agencies within the Federal system. The two prime considerations in developing items were availability of time-series data and the appropriateness of a potential item as an objective indicator of conditions of well-being. Measures were developed which were judged to be reflective of a generally recognized aspect of social well-being and/or a focus of government policy and programs.

Data

Data circa 1970 were drawn from two sources: The Census of Population which contains county data on a wide array of social and economic characteristics and Vital Statistics which reports data on deaths from

various causes. 3/ The data were used to derive an initial set of items 4/ reflecting conditions pertaining to income, employment, labor force participation, education, health, family, law and order, and social opportunities and participation.

Items were selected from the initial pool and were reduced to 13 by applying the following criteria: (1) only one measure of each indicator was retained (for example, median family income versus per capita income); (2) simple measures were selected rather than mathematically complex ones; and (3) indicators were selected which were correlated with only a subset of the other indicators. In retrospect, we feel that our success in using factor analysis for index construction was enhanced by the selection process of the final set of measures. Later it was deemed desirable to drop a measure of unemployment because it was judged to be an unstable measure of structural unemployment.

Thus, the twelve indicators retained were:

1. Median family income, 1969
2. Percent of families with employed male heads not in poverty, 1969
3. Median school years completed, 1970
4. Percent of occupied dwellings with complete plumbing, 1970

3/ While county data are available through many decennial censuses, sources for objective indicators for all counties are relatively few.

4/ Census measures derived from the five percent sample were avoided, and, to add reliability, measures from the Vital Statistics were averaged over a five year period.

5. 1965-69 annual average standardized 5/ age mortality from all causes per 10,000 population in 1970

6. 1965-69 annual average standardized 5/ age mortality rate from influenza and pneumonia per 100,000 population in 1970

7. 1965-69 annual average infant mortality rate (deaths under one year per 1,000 live births)

8. Percent of persons under 18 years old living with both parents, 1970

9. Percent of families with female heads, 1970

10. Male-female difference in labor force participation rate, 1970

11. 1965-69 average annual age standardized 5/ mortality rate from suicides per 100,000 population in 1970

12. 1965-69 average annual age standardized 5/ mortality rate from cirrhosis of the liver per 100,000 population in 1970

Construction of the composite indexes involved three major steps: (1) principal components factoring of 12 variables for 3,097 counties, (2) deriviation of factor scores following the composite estimates method and (3) conversion to a common scale. An explanation of each of the steps follows.

5/ The following formula was used to age standardize county mortality rates:

$$(CS) = \frac{(CC)}{(CE)} (NC)$$

where
CS = the county's age standardized mortality rate
CC = the county's crude mortality rate
CE = the county's expected mortality rate
NC = the nation's crude mortality rate

and

$$CE = (CP)i\ (NC)i$$

where
(CP)i = percentage of the county's population in the ith age group
(NC)i = the national mortality rate in the ith age group

Principal Components Analysis

The clusters of interrelationships among the set of 12 indicators provide some insight into major patterns in the data (Table 1). However, the correlation matrix shown in Table 1 was factor analyzed to delineate statistically the patterns of clustering among the indicators. Specifically, principal components analysis (Harman, 1967; Rummel, 1970) was employed (1) to identify key dimensions of social well-being represented in the patterns of interrelationships among the 12 selected indicators and (2) to determine which indicators to use to build factor scores for each index.

The principal components analysis involved a principal factoring without iterations for the initial factor solution which was obliquely rotated following the direct oblimin method to a terminal solution (Nie, et.al., 1975). An oblique rotation was selected rather than an orthogonal rotation. The primary reason for the choice was the belief that a rotation procedure which assumed correlated factors was more appropriate to represent dimensions of well-being than one which assumed orthogonal (uncorrelated) factors. 6/

The rotated solution (Table 2) yielded four factors 7/ or dimensions of social well-being which were defined by the items strongly associated

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6/ An oblique rotation will yield orthogonal factors if the factors are in fact uncorrelated. In this instance, there were moderate (>.4) correlations among 3 of the 4 factors. (Table 4)

7/ The initial solution accounted for 72 percent of the total variance among the 12 indicators.

Table 1. Zero order correlation coefficients for twelve selected social well-being items

Item	Item											
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X1	1.000											
X2	.815	1.000										
X3	.712	.717	1.000									
X4	.706	.742	.804	1.000								
X5	-.240	-.357	-.324	-.350	1.000							
X6	-.172	-.233	-.274	-.377	.406	1.000						
X7	-.273	-.315	-.338	-.383	.275	.488	1.000					
X8	.418	.456	.486	.480	-.410	-.421	-.328	1.000				
X9	-.321	-.390	-.456	-.424	.340	.455	.340	-.850	1.000			
X10	.151	.087	.235	.238	-.096	-.075	-.106	.428	-.439	1.000		
X11	.076	.084	.105	-.010	.021	.123	.099	.037	-.060	.031	1.000	
X12	.136	.087	.059	.012	.035	.085	.080	-.043	.052	-.021	.140	1.000

X1 = Median family income
X2 = Employed male heads not in poverty
X3 = Median school years completed
X4 = Complete plumbing
X5 = Infant mortality rate
X6 = Total mortality rate
X7 = Mortality rate from flu and pneumonia
X8 = Percent of children living with both parents
X9 = Percent female headed households
X10 = Male-female difference in labor force participation
X11 = Suicide rate
X12 = Mortality rate from cirrhosis of liver

Table 2. Rotated solution of factor analysis of twelve items for U.S. counties

Item	Factor I (Socio-Economic Status)	Factor II (Health Status)	Factor III (Family Status)	Factor IV (Social Pathology)
	------- Factor pattern loadings 1/ -------			
Median family income, 1969 (Dols.)	-.959	.116	-.033	-.039
Percent of families with employed male heads not in poverty (Pct.) 2/	.914	-.031	-.062	-.047
Median school years completed, Persons 25 yrs and over, 1970 (yrs.)	.848	-.014	.112	-.018
Percent of occupied dwellings with complete plumbing, 1970 (Pct.)	.850	-.090	.055	.106
Infant mortality (deaths per 100,000 births)	-.055	.679	-.015	.114
Total mortality (deaths per 100,000 population) 3/	.096	.876	-.035	-.060
Mortality from flu and pneumonia (deaths per 100,000 population 3/	-.149	.638	.055	-.158
Percent of persons under 18 yrs. living with both parents, 1970 (Pct.)	.164	-.366	.656	-.059
Percent of families with female heads (Pct.)	-.059	.400	-.699	.073
Male-female difference in labor force participation (Pct.) 4/	-.022	.194	.864	.063
Mortality from suicides (deaths per 100,000 population) 3/	-.035	.083	.169	-.741
Mortality from cirrhosis of liver (deaths per 100,000 population) 3/	.058	-.045	-.185	-.738
Sum of squares	3.27	1.99	1.75	1.16
Unrotated solution:				
Eigenvalue	4.74	1.61	1.27	.96
Percent of total variance explained	39.5	13.4	10.6	8.0
Reliability of Composite Indexes				
$\bar{X}$	100.0	100.0	100.0	100.0
Standard Deviation	20.0	20.0	20.0	20.0
Number of Items	4.0	3.0	3.0	2.0
Cronbach's Alpha	.92	.85	.80	.25

1/ Underscored loadings greater than .500 designate indicators included in index for each factor. Loadings are the pattern matrix from an oblique rotation.
2/ Includes male heads 16-64 years old.
3/ Mortality is age adjusted and represents an annual average rate for 1965-69 with the base population being for 1970.
4/ Persons 16 years and over.

with the factor. To identify the factors, loadings in excess of .50 were interpreted, and it was assumed that the salient variables were affected by a common underlying condition. 8/

Within this context, it is important to keep in mind that a factor does not necessarily reduce to the indicators by which it is defined and measured. 9/

The four factors 10/ were defined as socioeconomic status, health status, family status, and social pathology.

Factor I was defined by four indicators: income, families with employed male heads not in poverty, school attainment, and dwelling units with complete plumbing. Each of these indicators reflected the economic and material resources of the population of a county relative to other counties. Thus, the composite profile of a county's level of income, poverty, education and plumbing availability was labeled socioeconomic status. The concept is indicative of a general standard of living as well as the economic base in a county.

Factor II, labeled health status, was specified by three indicators of mortality including total mortality rate, infant mortality rate and

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8/ Rummel (1970) discusses this approach to interpretation which assumes that the factor represents an underlying cause of the inter-relationships in the variables.

9/ Depending on the availability of data, numerous other indicators could be used to measure the concepts represented in the factor.

10/ Each factor was empirically defined through the principal components analysis. The substantive interpretation placed upon the factor solution constitutes an attempt to identify general states of social well-being. The interpretation does not suggest desirable or normative conditions of well-being for any given individual or family unit.

mortality from influenza and pneumonia. All reflected problems of physical health of the aggregate population in a county.

Three indicators, (1) proportions of children 18 years and under living with both parents, (2) for persons 16 years and older, difference in percent of males and percent of females in the labor force, and (3) percent of families with female heads defined Factor III. In short, high levels of the underlying condition were related to high percent of dependent children residing with both parents, low labor force participation of females relative to their male counterparts, and low percent of families with female heads. Each of the variables was related to family organization, and the factor was labeled family status. Family orientation has been identified in other research as an important dimension of social well-being. This is particularly true in the work with subjective indicators (Andrews and Withey, 1976).

Factor IV consisted of two indicators: mortality from suicides and mortality from cirrhosis of the liver. Both of the indicators are suggestive of high levels of personal alienation from group life among the population. Thus, the factor was labeled social pathology and refers to the degree of personal pathologies present in the population of an area. 11/

11/ Direct indicators of social disruption such as crime rates were unavailable for this study. The result of the inclusion of such variables might have had one of two effects: (1) to form a stronger and more general factor of social pathology, or (2) to form a separate dimension of pathology with emphasis on structural disorder, rather than personal disorder.

Factor Scores

Factor scores were derived following the composite estimates method (Cattell, 1957). This involved estimates of composite scores from summation of standardized values of the indicators designated by the factor analysis as the salient components of the factor. 12/ Simply, values for any county were expressed as Z scores, $(X-\bar{X})/s$, where X is the county value, $\bar{X}$ is the mean for the U.S. (all 3,097 counties) and s is the U.S. standard deviation. The equation employed to construct the index for a given factor Ii for county i, may be expressed as:

$$Ii = \sum_{k=1}^{n} Z_{ki}$$

where: k = number of indicators to be included in the index

Z_{ki} = standardized value of variable k for county i

Scaling the Index

The composite indexes derived through the above process resulted in four scales with negative values and different means and standard deviations. To make the indexes more useable and readily interpretable, the factor score distributions were converted to a common scale with mean set at 100 and standard deviation set at 20. 13/

12/ Use of the composite estimates method often entails weighting of variables in the index. In this case, the decision was made to assign weights of 1 to each variable. Two considerations prompted the equal weighting decision. One was the similarity of the loadings (often used as the basis for weighting) for the salients of any factor (Table 2). A second practical consideration was the anticipation of replication with 1980 data whereby the weighting of 1 procedure could be easily repeated.

13/ A few extreme scores were more than 5 s.d. from the mean and thus assumed negative values.

The transformation to T-scores employed the following equation:

$$I^t = 100 + 20ZI_i$$

where:

ZI_i = standardized value of I_i calculated as $\frac{(I_i - \bar{X}I_i)}{sI_i}$

with $\bar{X}I_i$ = mean of untransformed index and sI_i = standard deviation of untransformed index.

Also, the transformed index scores for each dimension of well-being were directionally derived so that high levels of socioeconomic status, health status, family status and low levels of social pathology were represented by high scores.

The procedures were applied to construct the four transformed indexes for all 3,097 counties. 14/ Each index expressed on a common scale facilitated comparisons both across cases and across indexes. For illustrative purposes four index scores for the twenty high ranking counties in socioeconomic status are shown in Table 3.

The reliability of the composite indexes was estimated through Cronbach's alpha coefficients (Bohrnstedt, 1969). Results in Table 2 suggest that we can place faith in the reliability of three of the indicators. However, the reliability of the social pathology index is questionable. The index built from two constituent items with a low (>.20) zero-order correlation should be interpreted with caution. The identification and selection of other measures of social disorganization will be a priority for subsequent analysis.

14/ Index scores for all counties are reported in Ross, Bluestone and Hines (1978).

Table 3. Index scores for selected counties

County/State	Socioeconomic status	Health status	Family status	Social pathology
United States	100.0	100.0	100.0	100.0
Hinsdale, CO	152.0	116.8	73.6	134.2
Los Alamos, NM	150.0	140.9	136.9	105.0
Montgomery, MD	148.9	127.5	113.1	97.8
Fairfax, VA	144.9	132.7	119.9	103.5
Juneau, AK	142.0	98.1	87.0	51.0
DuPage, IL	140.8	123.7	128.0	109.3
Nassau, NY	140.6	187.7	116.8	103.3
Marin, CA	140.2	124.7	101.5	67.4
Johnson, KS	138.5	132.0	122.7	103.2
Oakland, MI	137.6	119.4	118.7	97.4
Westchester, NY	137.2	109.1	101.5	98.1
Rockland, NY	137.1	114.6	113.1	106.9
Anchorage, AK	137.0	113.6	114.2	101.5
Morris, NJ	136.9	116.2	122.0	103.5
San Mateo, CA	136.9	122.8	99.3	74.3
Bergen, NJ	136.9	119.2	114.5	107.5
Somerset, NJ	136.7	119.2	115.2	106.0
Arlington, VA	136.2	113.6	82.8	85.2
Pitkin, CO	135.9	113.6	95.1	56.5
Norfolk, MA	135.1	109.8	107.8	103.6

While factor analysis is generally viewed as a validation tool through the verification of underlying patterns in a data set, it does not serve for construct validation. Future work to refine the techniques and expand the content of the system will give attention to statistical validation of the constructs.

Utility of Composite Indexes

We have described a general approach to the construction of a system of indicators to measure social well-being in U.S. counties. In such a system, are composite indexes superior to single item indicators? Are they potentially interpretable and useful to aid in policy and planning? We offer several reasons to support our position that a valid and reliable system of indicators reported as composite numerical indexes has utility both for research and policy purposes.

Although single indicators are useful for reporting gross trends as evidenced by the social indicators series issued by the Department of Commerce (1976), composite indicators are superior to single indicators to measure well-being in territorial units such as counties. Importantly, composite indicators can summarize the broad and abstract conditions of well-being which cannot be readily described with a single indicator or a series of single indicators (see Bunge, 1975). With a system similar to ours, a composite index represents a new variable which cannot be reduced to any of its component parts. As seen in the data in Table 4, correlations between three of the four county composite indicators (new variables) exceed .40. However, if the conditions of

well-being had been measured singularly with any of the component variables the resulting correlations would have been different. (See Table 1.)

To use a composite indicator also counteracts the limitations of any one variable as a valid and reliable indicator of the common condition. With our data, measuring socioeconomic conditions in Alaska as median income would produce vastly different results from using percent of dwelling units with plumbing. The former would assess socioeconomic status as high and the latter as low.

The policy utility of composite indexes like the system reported here has potential for providing the general public and policymakers with a concise overview of conditions of well-being in the United States. Composite indicators provide a quick, simple, readily interpretable picture of variations in well-being across the Nation. They can be used by policymakers to monitor current social conditions in the Nation and to identify the relative severity of conditions in various geographic locations.

Reliance on composite indicators rather than single indicators negates the likelihood that prescriptions to improve conditions of well-being will be couched in terms by which well-being is measured. If median dollars of family income is used to measure socioeconomic conditions, the tendency exists to infer that raising income levels will automatically improve socioeconomic conditions, and this is not necessarily the case.

We caution too that while our indexes have utility for effectively informing policymakers about social conditions in various areas of the United States and may even have some potential for monitoring the geographic distribution of general government inputs, they are not intended as allocative mechanisms for specific government programs. Nor should they be used as a basis for evaluating any current government programs. This is not to say though that enlightened policymakers could not choose to compare the patterns of government spending with the patterns of well-being in the Nation as measured with the composite indicators. In short, the policy utility of our composite indicators rests with their usefulness for informing policymakers about conditions, but they are not intended as inputs to direct policy actions.

Table 4. Zero order correlation coefficients for composite index scores and component variables

	Socioeconomic Status	Health Status	Family Status	Social Pathology
Socioeconomic status	1.00			
X1	.90			
X2	.91			
X3	.90			
X4	.90			
Health status	.44	1.00		
X5		-.73		
X6		-.82		
X7		-.76		
Family status	.45	.44	1.00	
X8			.90	
X9			-.90	
X10			.74	
Social pathology	.02	.19	.10	1.00
X11				-.76
X12				-.76

X1 = Median family income
X2 = Employed male heads not in poverty
X3 = Median school years completed
X4 = Complete plumbing
X5 = Infant mortality rate
X6 = Total mortality rate
X7 = Mortality rate from flu and pneumonia
X8 = Percent of children living with both parents
X9 = Percent female headed households
X10 = Male-female difference in labor force participation
X11 = Suicide rate
X12 = Mortality rate from cirrhosis of liver

County Patterns of Social Well-Being

We now turn attention to use of the indexes to study differences in well-being for groups of counties classified by metro or nonmetro designations and by region. Specifically, mean index scores were calculated for counties grouped by metro-nonmetro status by region, and by a measure of rural-urban orientation. 15/ These results are presented in Table 5.

Socioeconomic Status

Metropolitan counties tended to have higher levels of socioeconomic status than nonmetropolitan counties. Mean scores were lowest in the most rural oriented groups of nonmetropolitan counties and highest in the counties of the greater metro counties. For the metropolitan counties, socioeconomic status declined with the degree of urban orientation, that is, from greater to medium to lesser metro counties. Although the scores in the most urbanized categories of nonmetro counties were similar to lesser metro counties, the socioeconomic status declined with the degree of rural orientation.

Among regions, metro counties of the Northeast, Northcentral and West had similarly high levels of socioeconomic status, well above the national average. However, metro counties in the South were lower in socioeconomic status than any of the nonmetro groups in the Northeast and West.

15/ A complete description of these 10 county delineations appears in Hines, Brown and Zimmer (1975).

Table 5. Four composite indexes of social well-being for metro and nonmetro counties, by region, 1970. 1/

Item	Number of Counties	Socio-economic Status	Health Status	Family Status	Social Pathology
	No.	U.S. Index = 100			
United States, total	3,097	100.0	100.0	100.0	100.0
Metro, total	612	115.7	106.1	99.3	99.2
Greater metro	175	122.6	108.6	102.4	97.8
Core	48	123.5	99.0	80.0	87.0
Fringe	127	122.2	112.1	110.8	101.9
Medium metro	258	113.9	105.3	99.4	99.8
Lesser metro	179	111.5	104.7	96.1	99.6
Nonmetro, total	2,485	96.1	98.5	100.2	100.2
Urbanized					
Adjacent to SMSA	191	112.4	103.7	97.2	100.9
Not adjacent to SMSA	137	109.4	99.8	95.3	98.3
Less urbanized					
Adjacent to SMSA	564	97.8	97.9	97.1	101.5
Not adjacent to SMSA	721	97.1	98.8	98.1	100.2
Totally rural					
Adjacent to SMSA	246	87.3	96.4	99.1	100.0
Not adjacent to SMSA	626	89.2	97.7	107.7	99.4
Northeast, total	217	118.3	101.2	100.1	98.7
Metro	100	123.6	103.6	98.9	100.3
Nonmetro	117	113.8	98.9	101.1	97.2
Northcentral, total	1,055	107.5	107.5	112.0	101.1
Metro	178	122.3	110.1	108.8	100.5
Nonmetro	877	104.4	107.0	112.6	101.2
South, total	1,387	87.8	94.0	88.5	103.6
Metro	270	106.4	102.4	93.2	101.3
Nonmetro	1,117	83.3	92.0	87.4	104.1
West, total	438	111.6	100.2	107.5	86.8
Metro	64	124.0	113.8	99.4	84.6
Nonmetro	374	109.5	97.9	108.9	87.1

1/ Values for each county grouping are simple means of county values.

Health Status

Health status was lower in nonmetro counties than metro counties as in the case of socioeconomic status. The average scores in the metro categories of counties were higher than the national average in all instances except in core counties of greater metro areas. Conversely, the average scores for all of the nonmetro classes were below the national average with the exception of the urbanized SMSA adjacent counties. Health status for this category tended to be more similar to the health status of the medium and lesser metro counties than the other types of nonmetro counties. Fringe counties within the greater metropolitan areas had a much higher health status than any other county type; however, the core counties among the greater metro counties were low in health status. This core-fringe difference did not occur for socioeconomic status.

Health conditions were appreciably below the national average in the South and appreciably above average in the Northcentral region. Conditions in the Northeast and West were about the same as in the nation as a whole. In nonmetropolitan counties, health status was considerably below average in the South and slightly below average in the Northeast and West. Among metro counties, health conditions were above the National average in all regions and appreciably above the National average in the West.

Family Status

Index of family status was above the national average in counties on the fringe of greater metropolitan areas and the totally rural counties not adjacent to a metropolitan area. Indexes below the national average characterize most other groups of counties. The mean score for

the greater metro core counties was notably low (mean equal 80.0). Average scores for the greater metro fringe (a mean of 110.8) and nonadjacent totally rural nonmetro counties (107.7) in contrast were well above the national average. These results suggest that family status, unlike socioeconomic status and health status, does not vary with county urban orientation. Rather high levels of family status appear to be associated with suburban living in metropolitan areas and with rural agriculturally-based life in nonmetropolitan areas.

Regional patterns of family status were characterized by scores below the national average in both metro and nonmetro counties of the South and scores above the national average in both metro and nonmetro counties of the Northcentral region. Otherwise, nonmetro areas of the Northeast and West had higher average scores for family status than their metro counterparts in those regions.

Social Pathology

No strong pattern of metro-nonmetro differences emerged from the social pathology indexes (Table 5). The main distinction was between core and fringe counties of greater metro areas. The lowest levels of social pathology (mean of 101.9) occurred among the greater metro fringe counties while the highest levels of social pathology were among the greater metro core counties (mean of 87.0).

Regional patterns of social pathology were characterized by consistently high pathology in metro and nonmetro counties of the West. Both metro and nonmetro counties of the South tended to have low levels of social pathology.

In summary, there were large metro-nonmetro differences for socio-economic status and health status but no discernable metro-nonmetro differences in family status and social pathology. Of greater interest, however, was the wide variation in mean indexes among the metro-nonmetro groups indicating a high degree of heterogeneity. For example, the mean scores of all indexes for the more urban-oriented nometro counties resembled those of the medium and lesser metro areas and differed from those of the more rural-oriented nonmetro areas. Except for socioeconomic status, large differences existed between core counties of the greater metro areas and their fringe (suburban) counterparts. While no discernable differences were observed in the mean scores of social pathology across all metro and all nonmetro counties, average pathology scores of core and fringe counties were notably different. For both family status and social pathology the mean scores of core and fringe counties represented the two extremes among all rural-urban orientation groups. These extremes reflect past trends in suburbanization and point out the hazards of treating metro and nonmetro counties as homogenous.

Regionally, socioeconomic status, health status, and family status were highest in the North and West and lowest in the South. Social pathology was highest in the West and lowest in South and Northcentral counties.

The analysis shows a substantial regional and metro-nonmetro variability across the Nation in the patterns and degree of well-being. High levels of socioeconomic well-being were not necessarily accompanied by high levels of well-being in other areas, as in the case of greater metro core counties. The problem of improving well-

being is multi-faceted and requires a multi-faceted solution. A major policy implication is that an effective government policy is one which will serve the particularized needs of regions, States and communities.

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